

**ABSTRACT OF THE DISCLOSURE**

The present invention provides a process for the production of olefins which process comprises co-feeding at least one unsaturated hydrocarbon with a paraffinic hydrocarbon-containing feedstock and a molecular oxygen-containing gas to an autothermal cracker, wherein they are reacted in the presence of a catalyst capable of supporting combustion beyond the normal fuel rich limit of flammability to provide a hydrocarbon product stream comprising olefins.